

The Global Atlas for Solar and Wind Energy

WORLD BANK ENERGY DAYS 2013

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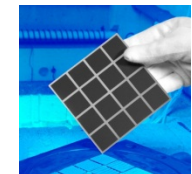
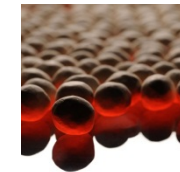
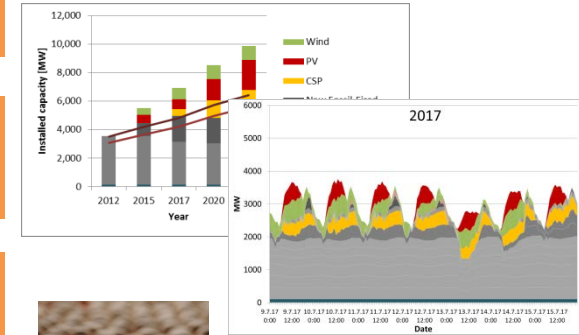
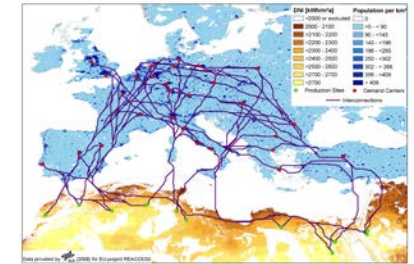
German Aerospace Center (DLR), Stuttgart



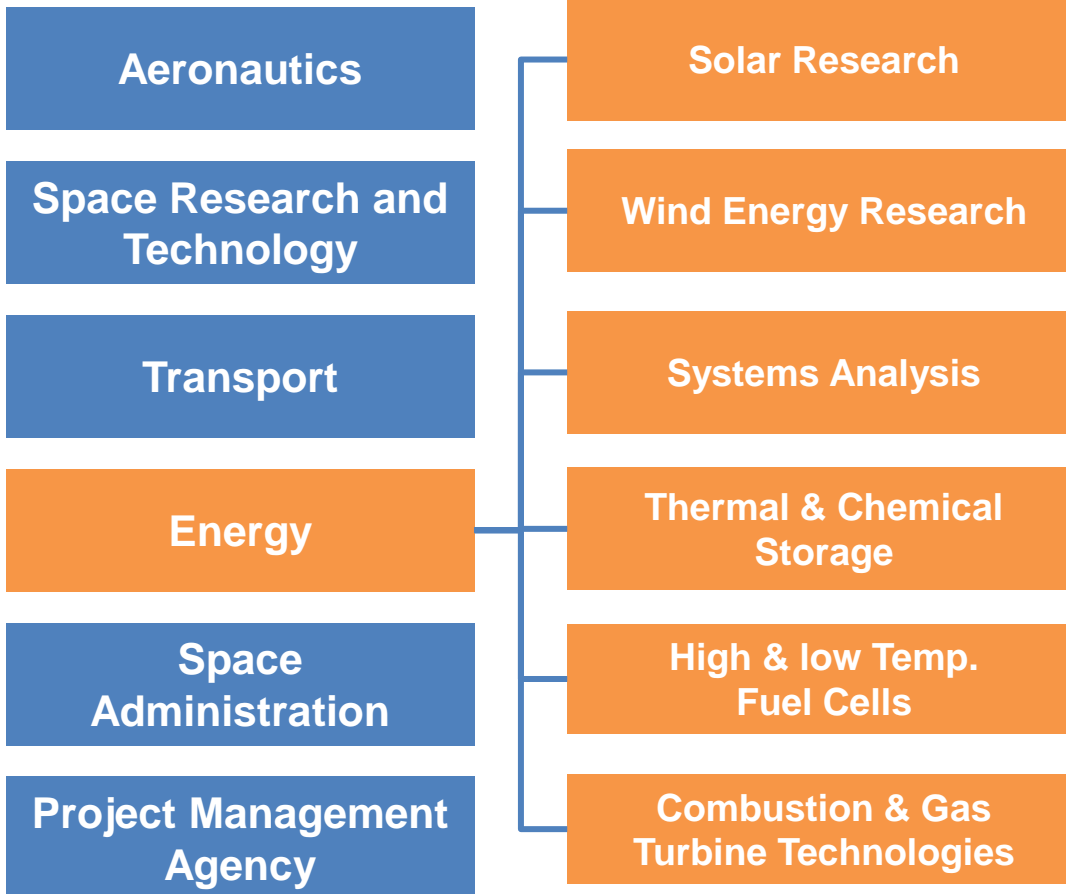
Knowledge for Tomorrow



DLR - Who we are



Research Areas



Background of the Global Atlas

- The Multilateral Working Group on Solar and Wind Energy of the Clean Energy Ministerial Process identified a Global Atlas for Solar and Wind Energy as **a need for the successful deployment of renewable energies.**
- IRENA now acts as a secretariat and governs the process.
- DLR coordinates the technical team (NREL, Mines-ParisTech, Masdar)
- Launch of the Global Atlas at the IRENA General Assembly in Abu Dhabi in January 2013



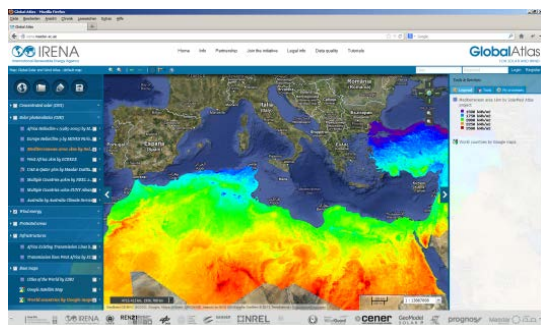
Why a Global Atlas for Solar and Wind Energy?

- Good resource data is the planning infrastructure for successful deployment of renewable energy technologies
- The Global Atlas shall be the **freely accessible central hub** for high quality renewable resource data and information about its proper use.
- Bridge the gap between nations having access to the necessary funding, technologies, and expertise to evaluate their national potentials, and those deprived of those elements.
 - Access to data and methods
 - Access to training materials and courses
 - Access to a network of experts



Networking with Collaborative Information Systems

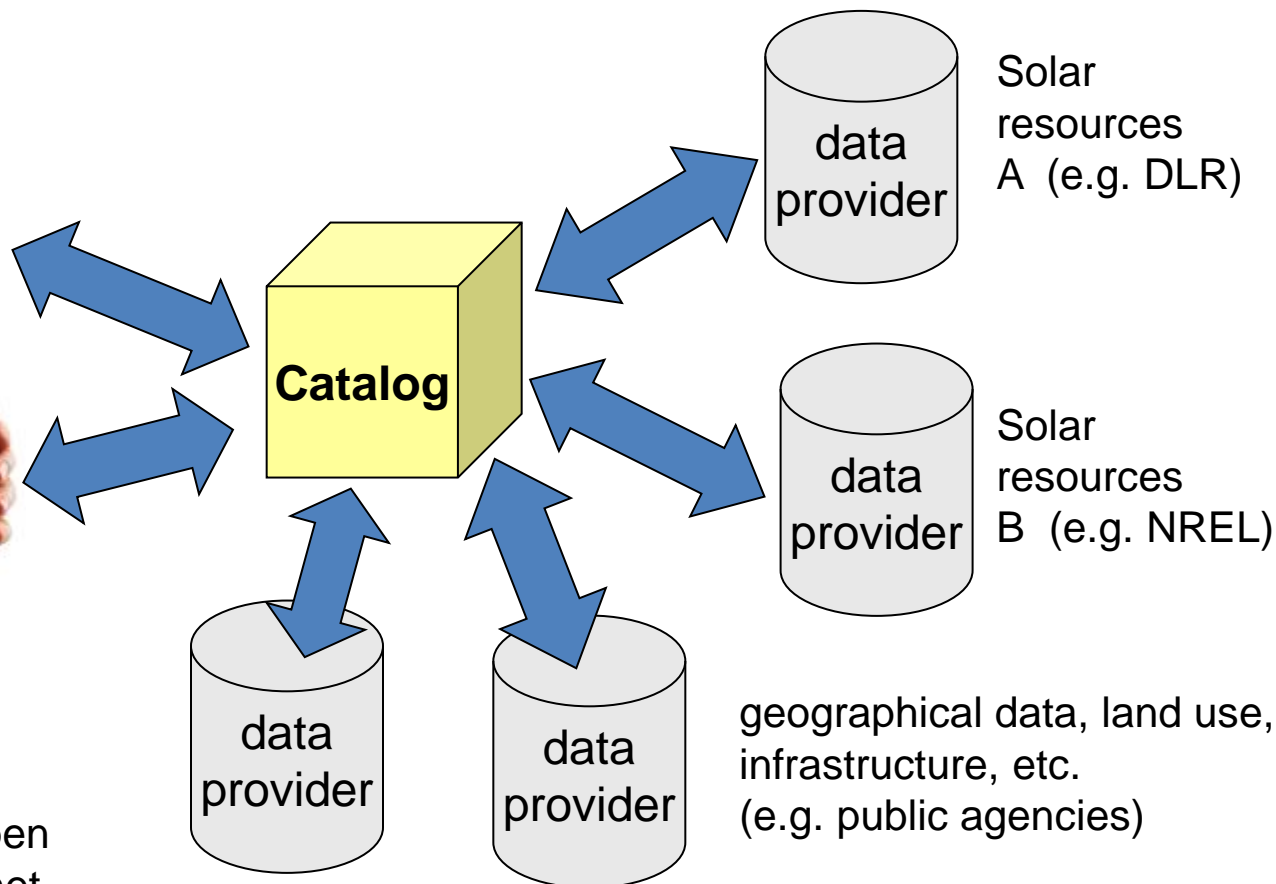
Web-GIS



user interfaces



Communication with open and standardized internet protocols



Policy data base
e.g. IEA, UNEP, REN21

**set up of the architecture within
the framework of GEOSS**



Participating Countries



Albania, Australia, Belgium, Denmark, Egypt, Ethiopia, France, Gambia, Germany, Grenada, Honduras, India, Iraq, Israel, Kuwait, Lithuania, Mali, Mexico, Mongolia, Nicaragua, Niger, Nigeria, Norway, Peru, Qatar, Saudi Arabia, Senegal, Seychelles, South Africa, Spain, Swaziland, Switzerland, Tunisia, UAE, Uganda, UK, Uruguay, USA, Yemen.

Technical partners and data providers

 <small>ASIAN DEVELOPMENT BANK</small>  Masdar <small>INSTITUTE</small>  SANDER <small>PARTNER</small>  VORTEX	 AICD <small>AFRICA INFRASTRUCTURE COUNTRY DIAGNOSTIC</small> GeoModel  MINES PARIS ParisTech  RCREEE <small>Regional Center for Renewable Energy and Energy Efficiency</small>  SPC <small>Secretariat of the Pacific Community</small> Deutsche WindGuard <small>The Wind Professionals</small>	 CENER <small>NATIONAL RENEWABLE ENERGY CENTRE</small>  giz <small>Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH</small>  NREL <small>National Renewable Energy Laboratory</small> <small>Innovation for Our Energy Future</small>  reegle <small>information gateway for renewable energy and energy efficiency</small>  UNDP  WASA <small>WORLD SOLAR FOR RENEWABLE ENERGY</small>	 DLR  JRC <small>EUROPEAN COMMISSION</small>  olade <small>Organización Latinoamericana de Energía</small>  REN21 <small>Renewable Energy Policy Network for the 21st Century</small>  UNEP  WMO	DTU Wind Energy <small>Department of Wind Energy</small>  prognos  SDC 
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Partner projects and multilateral initiatives

 EnerGE  ISES	 ESMAP <small>Energy Sector Management Assistance Program</small>  SOLARMED	 OpenEI OPENENERGYINFO  SUSTAINABLE ENERGY FOR ALL	 CLEAN ENERGY MINISTERIAL <small>Accelerating the Transition to Clean Energy Technology</small>  swera	 GEO <small>GROUP ON EARTH OBSERVATIONS</small>
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GlobalAtlas
FOR SOLAR AND WIND

IRENA
International Renewable Energy Agency

www.irena.org/GlobalAtlas

The screenshot shows the IRENA Global Atlas website. At the top is the IRENA logo and navigation links: Home, About, Partnership, and Join the initiative. Below this is a main banner with a world map and the text 'Welcome to the Global Atlas'. A callout box labeled 'Map interface' points to the 'Map Interface' tab in the navigation bar. Another callout box labeled 'Search data sources' points to the 'Data Sources' tab. A third callout box labeled 'Training Material' points to the 'Learning about Potentials' tab. Below the banner, there is a section titled 'What is the Global Atlas for Solar & Wind?' with a paragraph of text and four buttons: 'Read more about the global atlas', 'Read more about the map interface', 'Read more on data quality', and 'Status and way ahead'. Below this are three main content blocks: 'Map Interface' with a map and a 'Directly launch the Map interface' button; 'Data Catalogue' with a search bar, a 'Directly launch the Data Catalogue' button, and a 'Contribute to the Global Atlas' section; and 'What users say' with a map and a 'See More' button. The footer contains navigation links and the copyright notice '© IRENA 2013'.

IRENA
International Renewable Energy Agency

Home About Partnership Join the initiative

Home Map Interface Data Sources Learning about Potentials

Welcome to the Global Atlas

What is the Global Atlas for Solar & Wind?

The Global Atlas is the comprehensive information platform on the potential of renewable energy. It provides resource maps from leading technical institutes worldwide and tools for evaluating the technical potential of renewable energies. It can function as a catalyst for policy development and energy planning, and can support investors in entering renewable energy markets.

Read more about the global atlas

Read more on data quality

Read more about the map interface

Status and way ahead

Map Interface

Search the database of worldwide atlases

Directly launch the Data Catalogue

Contribute to the Global Atlas

Data providers willing to contribute independently are welcome to contact potentials@irena.org to initiate the dialogue.

Contribute to the Global Atlas

What users say

See More

Home | About | Partnership | Join the initiative

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Map Interface

The screenshot shows the Global Atlas web interface in a Mozilla Firefox browser. The interface includes a top navigation bar with links like Home, Info, Partnership, Join the initiative, Legal info, Data quality, and Tutorials. The main content area features a map of the Mediterranean region with a color-coded solar radiation overlay. On the left, there is a sidebar with a list of layers under categories like Concentrated solar (DNI), Solar photovoltaics (GHI), Wind energy, Protected areas, Infrastructures, and Base maps. On the right, there is a legend and a 'Tools & Services' section. Callouts point to various parts of the interface: 'Add and search layers' points to the top right; 'Active layer tree' points to the left sidebar; 'Map Window' points to the central map area; 'Save and load maps' points to the top left; and 'Legends' points to the right sidebar.

Add and search layers

Active layer tree

Map Window

Save and load maps

Legends

Search Data

Description of the selected data sets

Search Criteria

Search results

The screenshot displays the Global Atlas web application interface. On the left, the 'Search Criteria' panel shows filters for 'By region' (Africa, Europe, etc.) and 'By type' (Raster layers, Vector layers, etc.). The 'Search results' panel lists various solar radiation datasets, including 'Solar GHI Polygon Multiple Countries 40km NREL 2006', 'Solar TILT Polygon Global NASA 2008', and 'HelioClim-1 Surface Solar Radiation'. The 'Description of the selected data sets' panel provides detailed information about the 'HelioClim-1 Surface Solar Radiation' dataset, including its source (Mines ParisTech), keywords, and contact information.

Search Criteria

Search results

Description of the selected data sets

HelioClim-1 Surface Solar Radiation

HelioClim-1 database contains 21 years of data (1985-2005). MINES ParisTech created HelioClim-1 by processing images from the Meteosat satellites. These data are of major interest for Africa, the Mediterranean Basin, and the Central Atlantic Ocean. They will provide valuable help for many applications, ranging from electricity production to climate studies. This service allows you either to - Compare up to five locations at a time and get summary time series of irradiances in Wh/m2, W/m2 and MJ/m2 on a daily, monthly or yearly basis - Retrieve one location at a time and get detailed time series of irradiances in Wh/m2, and associated informations (Uncertainty, Hour Ratio, Irradiation at the Top of Atmosphere) on a daily, monthly or yearly basis. Access to this resource is provided on a full, open and unrestricted basis addressing the GEOS Data CORE sharing principles. Implementation is provided as an OGC (Open Geospatial Consortium) WPS (Web Processing Service).

Surface Solar Radiation multi-point summary comparison helper application is available at:
<http://gppf.geneis-fp7.eu/web/guest/service-detail?serviceId=C4828C80> (login:demo passwd:demo).

Surface Solar Radiation single point detail helper application is available at:
<http://gppf.geneis-fp7.eu/web/guest/service-detail?serviceId=C582CA80> (login:demo passwd:demo)

Type: Web Processing Service

Keywords: thematicProcessingService, solar energy, irradiation, electricity generation, Surface Solar Radiation, HelioClim, Meteosat, Irradiation, Irradiance, Mines-ParisTech, SoDa, GEOS Data CORE, geosDataCore, geosDataMonetaryCharge

Created: 2011-10-18

Published: 2011-10-18

Period: 1970-01-01T00:00:00 until 1970-01-01T00:00:00

Metadata: [Open in external window](#)

Source: Mines ParisTech

Contact: [Lionel Menard](#)

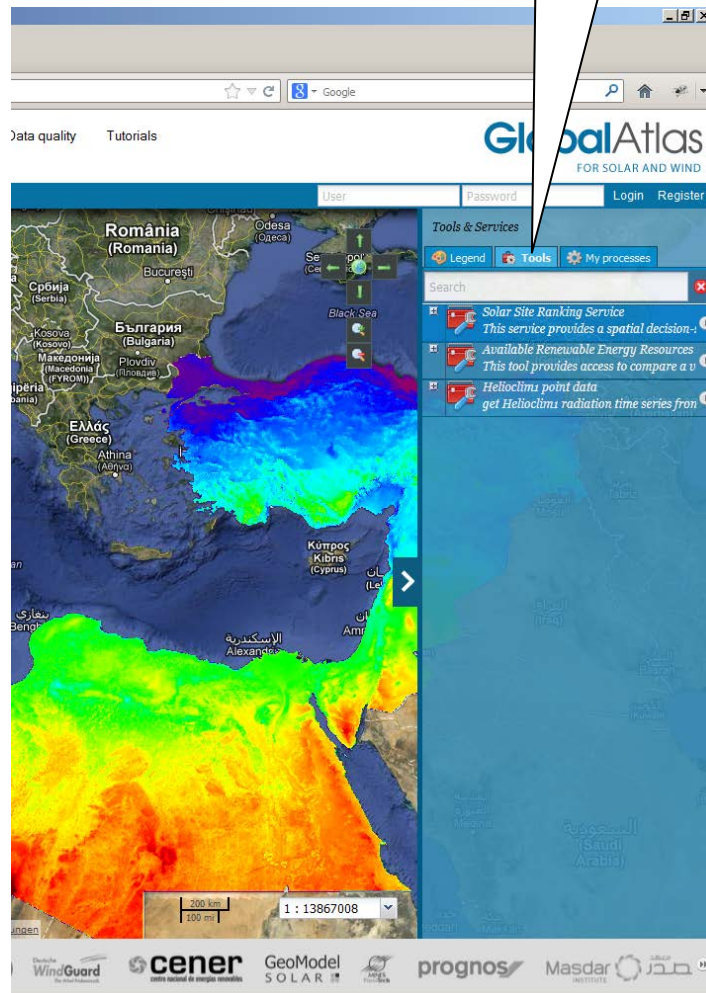


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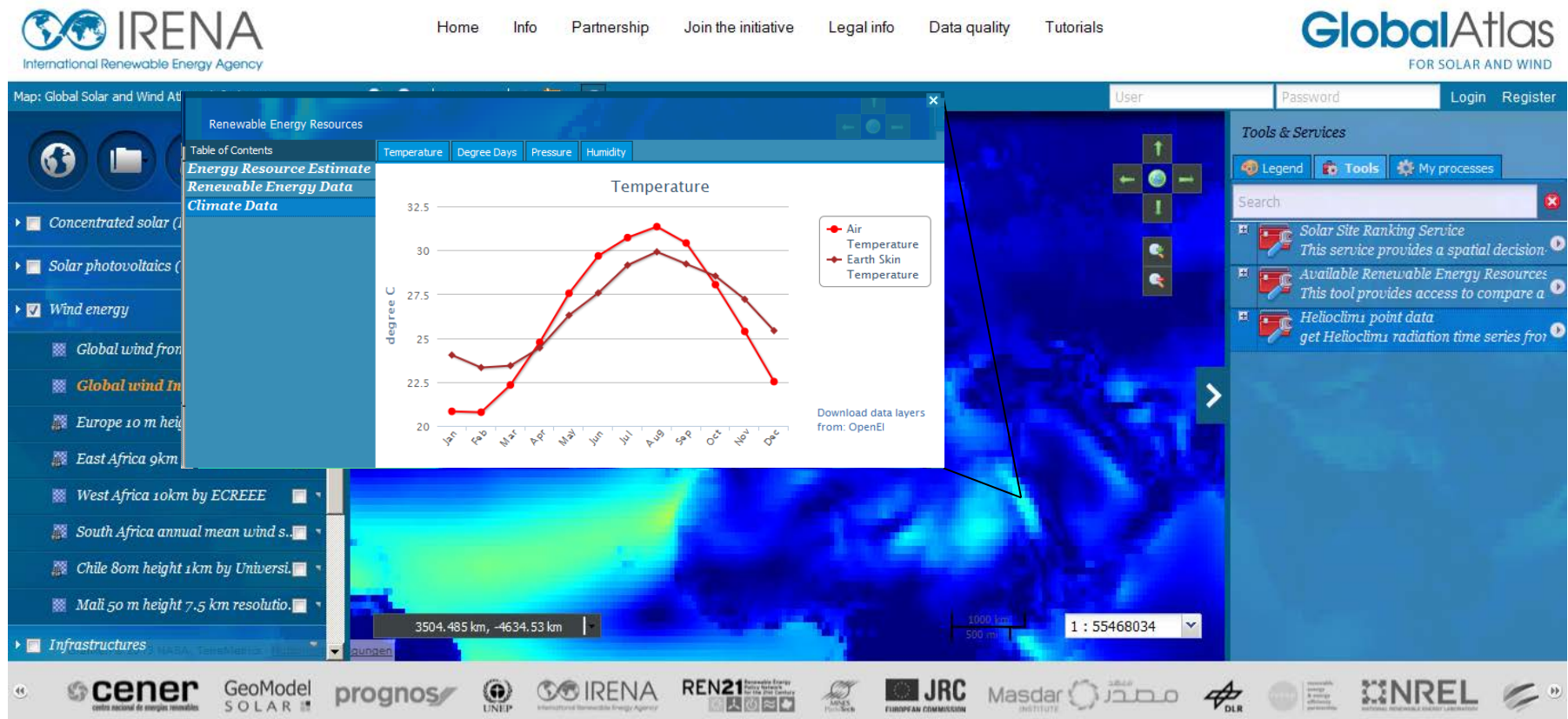
Web-GIS Tools

Tools



- Tools can be used
 - to extract more detailed information from the data sources
 - Processing of the data for further analysis
- Existing tools so far:
 - Solar Site Ranking
 - Available RE Resources
 - Time Series Point Query
- New tools will be developed based on use experience and end user feedback

Available RE Resources Tool



Tool for Site Ranking

Setting of Parameter
for the Tools

The screenshot displays the 'Solar Site Ranking Service' web interface. It features a dark blue header with the title and a DLR logo. The main content area is divided into four sections, each with a blue expandable header and a white body containing radio buttons for optimal values and sliders for weighting. The 'Options for Direct Normal Irradiance (DNI)' section has 'high irradiance' selected and a weighting slider near the right. The 'Options for Global Horizontal Irradiance (GHI)' section has 'high irradiance' selected and a weighting slider near the left. The 'Options for Slope' section has 'small slope' selected and a weighting slider near the left. The 'Options for Population Density' section has 'low density' selected. Each section includes an 'Advanced' dropdown menu and an information icon. At the bottom, there are 'Back', 'Next', 'Run', and 'Cancel' buttons.

Solar Site Ranking Service

Options for Direct Normal Irradiance (DNI)

Optimal value: ☐ low irradiance ☒ high irradiance

Weighting for direct irradiance:

Advanced |

Options for Global Horizontal Irradiance (GHI)

Optimal value: ☐ low irradiance ☒ high irradiance

Weighting for horizontal irradiance:

Advanced |

Options for Slope

Optimal value: ☒ small slope ☐ large slope

Weighting for slope:

Advanced |

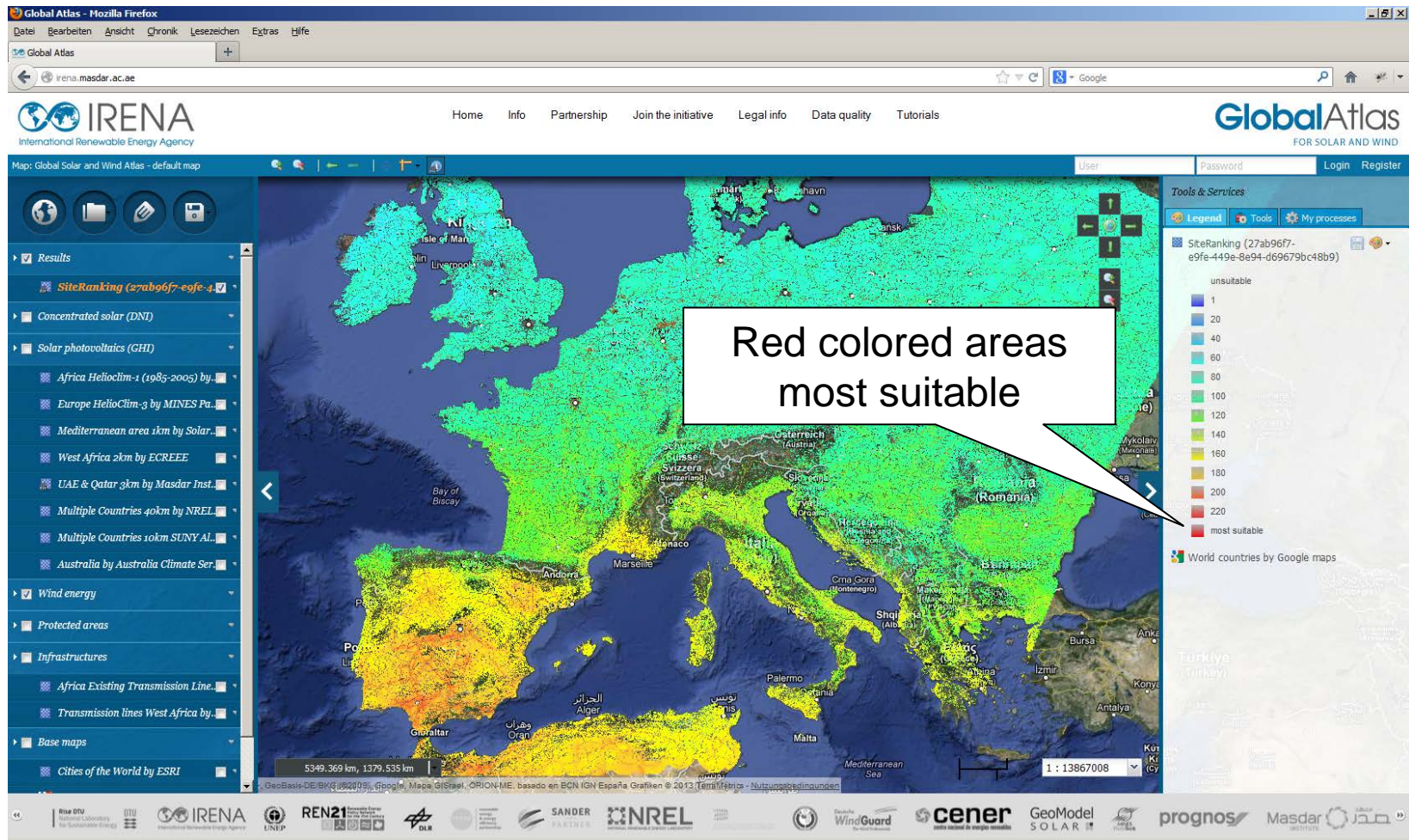
Options for Population Density

Optimal value: ☒ low density ☐ high density

Advanced |

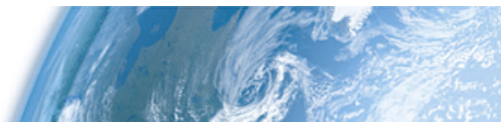
Back Next Run Cancel

Site Ranking Result



Summary and Outlook

- The Global Atlas for Solar and Wind Energy is an open access platform for renewable resource data
 - In principle anyone can provide data (data sharing agreement with IRENA required, standards on data quality and transparency need to be followed – to be defined in 2013)
- New renewable technologies will be added in the future (geothermal, hydro, biomass, tidal)
- Newer high resolution data sets will be added
 - World Bank ESMAP resource assessments will contribute to the Atlas
- New tools will be developed and added in the future
 - Again: anyone can participate and contribute



Thank you very much for your attention!!!

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Point Query Results

